

CLAIMS:

1. An image processing apparatus comprising:
an imaging optical system for forming an
image of an object on an imaging surface;
a color imaging device including a plurality
of photo detectors arranged on said imaging surface,
each of said photo detectors forming a pixel, a
multiplicity of sets of four filters for three colors,
two of said four filters being used for selected one of
said three colors, said filters being arranged at
positions corresponding to said photo detectors,
respectively, said object image being formed on said
photo detectors through each of said filters by said
imaging optical system;

shift drive means for shifting said imaging
optical system and said photo detectors relatively to
each other by a length corresponding to a predetermined
number of pixels in said imaging surface; and

an image processing unit for generating an
image using a plurality of image data picked up before
and after said shift;

wherein said image processing unit generates
and outputs a single monochromatic image using only the
pixel data detected by the photo detectors having said
two filters of a single color.

2. An image processing apparatus according to
Claim 1,

wherein said color filters are arranged

PROPRIETARY MATERIAL
© 2005 Matsushita Electric Industrial Co., Ltd.

according to the Bayer scheme.

3. An image processing apparatus according to
Claim 1,

wherein said shift drive means shifts said
imaging optical system and said photo detectors
relatively to each other by a length corresponding to
 $1/n$ (n : integer) of a pixel.

4. An image processing apparatus according to
Claim 1,

wherein said single color used by said two
filters is green.

5. An image processing apparatus according to
Claim 1,

wherein said image processing unit inter-
polates the pixels lacking the pixel data of said
single color in an image data with the pixel data in
another image data.

6. An image processing method comprising the
steps of:

picking up the image of an object formed on
the imaging surface of an imaging optical system, by a
color imaging device including a multiplicity of sets
of four filters two of which process selected one of
the three primary colors, said filters being arranged
at positions corresponding to said photo detectors,
respectively, on said imaging surface;

extracting the pixel data of the pixels
corresponding to said two filters of a single color

from the image data of said image picked up;

shifting said imaging optical system and said color imaging device by a length corresponding to $1/n$ (n : integer) of a pixel relatively to each other in said imaging surface;

picking up, by said color imaging device, the image of the object formed on said imaging surface after said shift;

extracting the pixel data of the pixels corresponding to said two filters of a single color from the image data of said image picked up after said shift; and

generating a monochromatic image by synthesizing a plurality of pixel data extracted before and after said shift.

7. A method according to Claim 6,

wherein said shifting step, said image picking up step and said extraction step are executed repeatedly a plurality of times for different shift positions.